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Constellation Energy
Generation Group

August 17, 2007

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Response to Requests for Additional Information for the Emergency Core Cooling System Surveillance Requirement Change

REFERENCES:

(a) Letter from Mr. J. A. Spina (CCNPP) to Document Control Desk (NRC), dated February 1, 2007, License Amendment Request: Revise Containment Sump Surveillance Requirement to Verify Strainer Integrity

(b) Letter from Mr. D. V. Pickett (NRC) to Mr. J. A. Spina (CCNPP), dated July 3, 2007, Request for Additional Information Regarding Revision to Containment Sump Surveillance Requirement to Verify Strainer Integrity (TAC No. MD4237 and MD4238)

In Reference (a), a request was made to revise Surveillance Requirement 3.5.2.8 to reflect the replacement of the containment recirculation sump suction inlet trash racks and screens with strainers. The Nuclear Regulatory Commission staff determined that additional information was needed to support their review of the request (Reference b). Our response to Reference (b) is attached.

A002
NRR

Should you have questions regarding this matter, please contact Mr. Jay S. Gaines at (410) 495-5219.

Very truly yours,

STATE OF MARYLAND :
: **TO WIT:**
COUNTY OF CALVERT :

I, James A. Spina, being duly sworn, state that I am Vice President - Calvert Cliffs Nuclear Power Plant, Inc. (CCNPP), and that I am duly authorized to execute and file this License Amendment Request on behalf of CCNPP. To the best of my knowledge and belief, the statements contained in this document are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other CCNPP employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.

Subscribed and sworn before me, a Notary Public in and for the State of Maryland and County of St. Mary's, this 17th day of August, 2007.

WITNESS my Hand and Notarial Seal:

Janet L. Sally
Notary Public

My Commission Expires:

March 1, 2011
Date

JAS/PSF/bjd

Attachment: (1): Response to Request for Additional Information
Enclosure: (1) Strainer Layout and Strainer Module Anchor System

cc: D. V. Pickett, NRC
S. J. Collins, NRC
Resident Inspector, NRC
R. I. McLean, DNR

ATTACHMENT (1)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Calvert Cliffs Nuclear Power Plant, Inc.
August 17, 2007

ATTACHMENT (1)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Mechanical and Civil Engineering Branch

Question 1:

Provide Information showing the layout of the new strainer arrangement and its support system.

Response:

See Enclosure (1), which provides a drawing showing the strainer layout and a drawing of the strainer module anchor system.

Question 2:

Provide the summary of evaluations performed by the licensee to show the structural adequacy of the new strainer design and its support system for the applicable loadings such as dead weight, differential pressure, thermal, seismic, and dynamic loadings.

Response:

The strainer vendor has provided a structural analysis report for the new strainer, water duct, and sump cover using both classical and finite-element methods (ANSYS). The rules of American Society of Mechanical Engineers Boiler and Pressure Vessel Code Section III, Division 1 – Subsection NF ("Supports") were applied.

- The strainer is designed for a differential pressure of 2.103 psi at a fluid temperature of 220°F.
- The deadweight of the strainer along with the weight of the maximum debris load is used in the seismic qualification of the strainer which the vendor performed using plant specific seismic response spectra curves. Since the strainer modules are installed on the base slab, differential seismic motion is negligible. The "water sloshing" effect during a seismic event is incorporated in the analysis.
- Sliding joints were incorporated between the strainer duct and the strainer support to ensure no significant thermal stresses develop. Slotted joints allow for thermal expansion of 0.394 inches. At maximum temperature conditions the thermal expansion is only 0.196 inches.
- The strainer hydrodynamic water mass is incorporated into the design.

Question 3:

Provide a summary of evaluations performed for the new strainer design acceptability from the consideration of dynamic effects associated with any potential high energy line break, pipe whip, jet impingement, and missile impact.

Response:

Containment sump recirculation is not required at Calvert Cliffs for a main steam line break; therefore, only the dynamic effects of a Reactor Coolant System pipe break is considered. On February 3, 1994 the NRC approved Calvert Cliffs application for leak-before-break on the primary coolant piping; therefore, dynamic pipe break effects do not need to be considered for this piping. Our current evaluation of the other RCS piping is that it is sufficiently small and separated from the containment sump strainer that it will not impact the sump strainer.

Safety Issues Resolution Branch

Question 1:

In the license amendment request, the licensee stated that "although the configurations of the existing trash racks and screens and the replacement sump strainer assemblies are different, they serve the same fundamental purpose." What are the bases to conclude that the trash racks and screen functions are retained in the replacement strainer? How is the design function of the removed trash racks addressed in the new design?

Response:

The original sump strainer design consists of a filtration surface of wire mesh that is tack welded to grating for structural support. This grating was our "trash rack" as it prevented large debris from damaging our screen. The replacement sump strainer has an equivalent filtration surface of perforated plate installed as cartridges that mount to a structural frame that provides the filtration surface with the required structural support. Therefore, the replacement strainer retains these same features as the original design.

In addition, the replacement strainer is designed to accommodate all sump debris that could be generated and transported to the sump strainer. Therefore, no separate debris-reduction trash rack device is required to support the sump strainer function.

Question 2:

Does the strainer replacement represent a change from two independent sumps to a shared sump? If so, please justify the change.

Response:

The strainer replacement does not represent a change from two independent sumps to a shared sump.

Question 3:

How will Calvert Cliffs ensure that all parts of the strainers show no evidence of structural distress or abnormal corrosion and are not restricted by debris? How will Calvert Cliffs ensure that the strainers will not incur undetected latent damage (e.g., from maintenance or operations activities on or in the vicinity of the strainers) that could adversely impact the strainers performance?

Response:

As required by Technical Specification 3.5.2.8, a visual inspection if the Containment emergency sump and strainer is performed to verify it is free from debris and is undamaged. This includes verifying that the subsystem suction inlets are not restricted by debris, and that the strainer module screens and ductwork are intact and free of debris and corrosion. The gaps around and between the strainer module screens and ductwork components are inspected to ensure they are not too large. In addition, the strainer module screens are visually inspected for debris, damage, or corrosion and the openings are inspected to ensure they are no larger than the specified amount. This surveillance is conducted by a Visual Level-2 qualified examiner and is performed towards the scheduled end of a refueling outage. Refueling outage work in the vicinity of the strainers is scheduled to be complete before the strainer inspection occurs, and the inspection would find any damage that may have been caused during the refueling outage. It should also be noted that there is a cover plate over the strainer modules that is designed to take the impact of falling objects. This helps to protect the strainer from damage during work inside of the Containment.

Question 4:

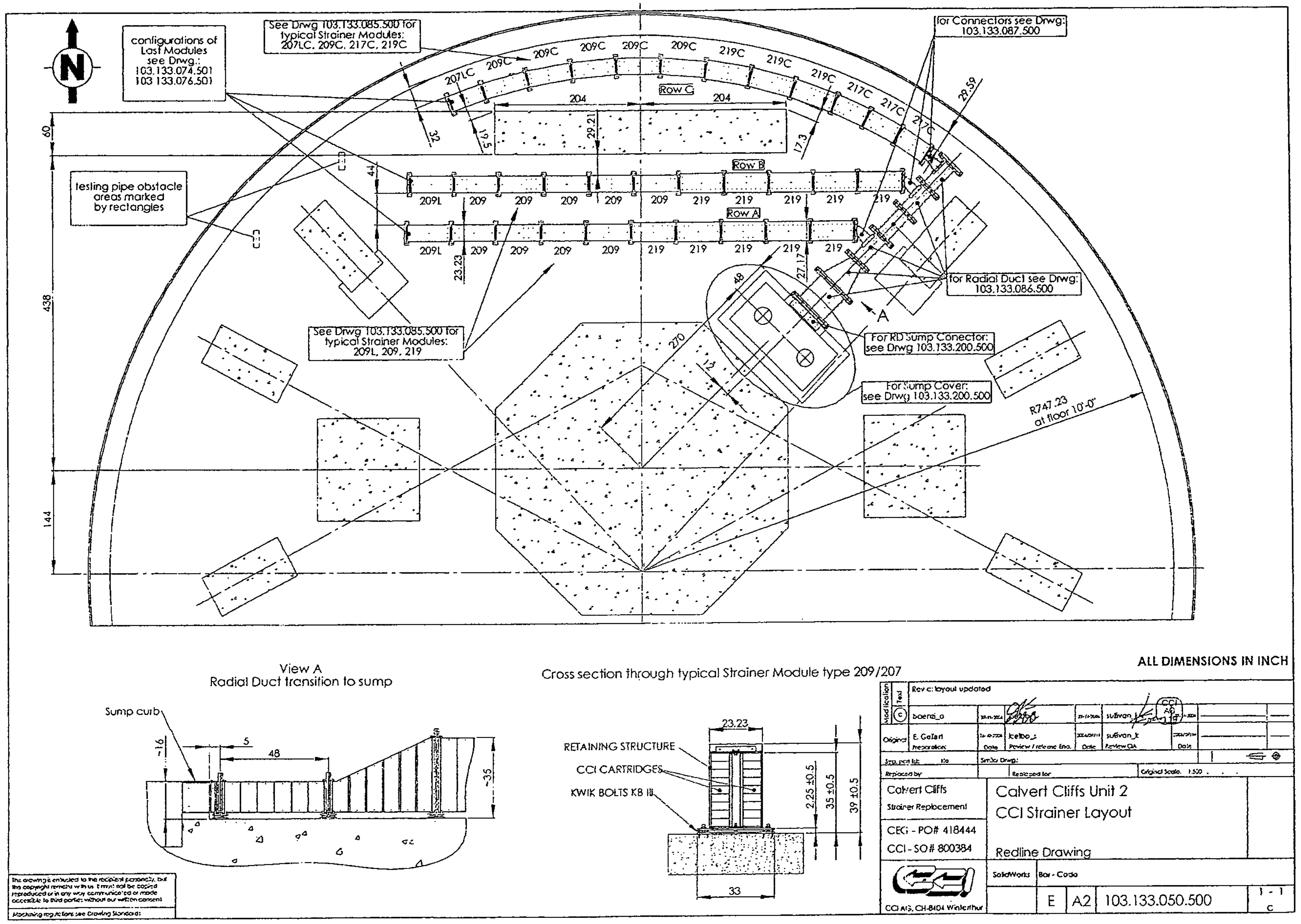
The installation of the new containment sump strainer increases the metal heat sink mass in Containment. Does this metal heat sink mass increase impact the containment long-term pressure transient in the loss-of-coolant accident analyses? If so please explain how.

Response:

The containment response analysis described in the Updated Final Safety Analysis Report contains conservatively low mass numbers for containment heat sinks. The addition of any metal mass to the Containment has both a conservative and a non-conservative effect. The non-conservative effect (i.e., resulting in an increase in containment peak pressure and vapor temperature) is due to the reduction in the containment free volume. The conservative effect is due to the substance acting as a passive heat sink. Analysis has shown that the net effect of additional steel from the new passive sump strainer reduces containment peak pressure and vapor temperature.

The loss-of-coolant accident analysis described in the Updated Final Safety Analysis Report contains conservatively high mass numbers for containment heat sinks in order to minimize containment backpressure. Minimizing the containment backpressure during the reflood phase of a loss-of-coolant accident analysis increases the steam specific volume which increases the resistance to steam venting and reduces steam flow to the Containment, thus minimizing the core reflood rate. A review of the existing heat sink data shows that it remains conservatively high even with the addition of the strainer metal mass.

Enclosure 1
to DE6501
Pg. 1 of 2



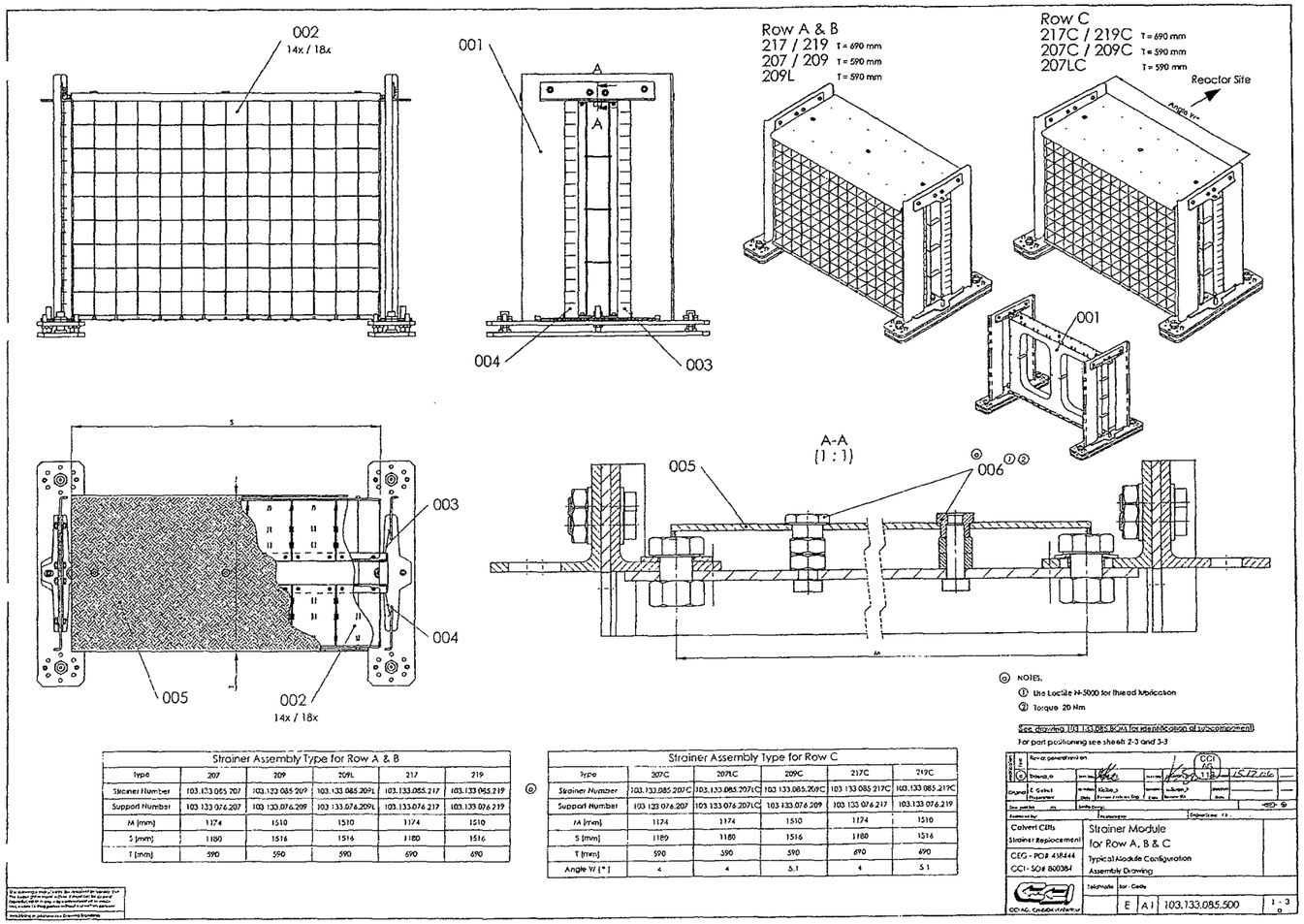
REV	DATE	DESCRIPTION	DWN	DSGN	DE	IR	APPROVED
0A	1/15/07	ISSUED FOR CONSTRUCTION ES200400048-001	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

UNIT 2
CCI STRAINER LAYOUT
REDLINE DRAWING

CALVERT CLIFFS NUCLEAR POWER PLANT
ENGINEERING SERVICES DEPARTMENT

CALVERT CLIFFS UNIT 2		SIZE C	CAT. 3
SCALE: NONE	VENDOR DWG. NO. 103.133.050.500		REV.
DWG. NO.	15960-0034SH0001		0A

Enclosure 1
to DE6501
Pg. 2 of 2



Strainer Assembly Type for Row A & B					
Type	207	209	209L	217	219
Strainer Number	103.133.085.207	103.133.085.209	103.133.085.209L	103.133.085.217	103.133.085.219
Support Number	103.133.076.207	103.133.076.209	103.133.076.209L	103.133.076.217	103.133.076.219
M [mm]	1174	1510	1510	1174	1510
S [mm]	1180	1516	1516	1180	1516
T [mm]	590	590	590	690	690

Strainer Assembly Type for Row C					
Type	207C	207LC	209C	217C	219C
Strainer Number	103.133.085.207C	103.133.085.207LC	103.133.085.209C	103.133.085.217C	103.133.085.219C
Support Number	103.133.076.207	103.133.076.207LC	103.133.076.209	103.133.076.217	103.133.076.219
M [mm]	1174	1174	1510	1174	1510
S [mm]	1189	1180	1516	1180	1516
T [mm]	590	590	590	690	690
Angle W [°]	4	4	5.1	4	5.1

REV	DATE	DESCRIPTION	DWN	DSGN	DE	IR	APPROVED
0A	11/15/07	ISSUED FOR CONSTRUCTION ES200400048-001	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Calvert Cliffs
Strainer Replacement
CEG - PO# 418444
CCI - SO# 800361

Strainer Module
for Row A, B & C
Typical Module Configuration
Assembly Drawing

E | A1 | 103.133.085.500 | 1 - 3 | 0

STRAINER MODULE
FOR ROW A, B, C
TYPICAL MODULE CONFIGURATION
ASSEMBLY DRAWING

CALVERT CLIFFS NUCLEAR POWER PLANT
ENGINEERING SERVICES DEPARTMENT

CALVERT CLIFFS UNIT 2	SIZE C	CAT. 3
SCALE: NONE	VENDOR DWG. NO. 103.133.085.500SH0001	REV. 0A
DWG. NO.	15960-0022SH0001	